

APOLLO 8 MISSION COMMENTARY, 12/21/68, GET 11900 CST 8:10A 21/1

PAO                    This is Apollo Control Houston, 1 hour, 19 minutes into the flight. We have had no additional contact with the crew since we left Honeysuckle Creek, and before we reach the States, we want to play for the second time for the Broadcast pool, the lift-off tape through about 5 minutes. Through some technical difficulty, it was missed the first time around, so now we are going to repeat both the picture and the audio track on the early minutes of lift-off. I'm sure other members of the media in the newsroom will understand. Could you roll the tape please?

CAPCOM                Lift-off.  
SC                    Roll and pitch program.  
CAPCOM                Roger.  
SC                    How do you read, Houston?  
CAPCOM                Loud and clear.  
CAPCOM                Mark, mode 1 bravo, Apollo 8.  
SC                    Mode 1 B.  
CAPCOM                Apollo 8, you are looking good.  
SC                    Roger.  
CAPCOM                Mark, mode 1 charlie, Apollo 8.  
SC                    Mode 1 C.  
CAPCOM                Apollo 8, Houston, you are GO for staging,  
over.  
SC                    Roger.  
SC                    Staging, I have just completed them.  
CAPCOM                Roger, I understand.  
SC                    Roger.  
SC                    Houston, how do you read, Apollo 8.  
CAPCOM                We read you loud and clear, Apollo 8.  
SC                    Okay, the first stage was very smooth,  
and this one is a little smoother.  
CAPCOM                Understand, smooth and smoother. Looks  
good here. Apollo 8, Houston, you're trajectory and guiding  
for GO, over.  
SC                    Thank you Houston, Apollo 8.  
CAPCOM                Apollo 8, Houston, you're trajectory and  
guiding for GO, over.  
SC                    Thank you, Michael.  
CAPCOM                You're looking real good.  
SC                    Very good.

END OF TAPE

PAO This is Apollo Control here, 1 hour 29 minutes into the flight. The first call from Mike Collins to Apollo 8, as yet without response. This will be - this pass across the States this time should last 15 or 20 minutes should be a major checkpoint on all systems, particularly that guidance and navigation system. Jim Lovell will be a very busy boy and so will Frank Borman and - insuring that all the checks are accurate. In the course of it, Bill Anders is to perform a backup communications check, switching to alternate channels should anything develop or go wrong in the primary communications mode. As the spacecraft moves across the Atlantic the crew then will proceed into their translunar injection checklist in preparation for the burn on the next rev. Again, we've put in a call, we've not heard anything, let's just open a line and stand by.

CAPCOM Apollo 8, this is Houston, over.  
 SC Houston, Apollo 8, over.  
 CAPCOM Roger. How do you read me?  
 CAPCOM Apollo 8, this is Houston, over.  
 SC Roger, Houston, Apollo 8. Standing by for a GO for the backup comm check, over.  
 CAPCOM Roger. Standby one, Bill.  
 CAPCOM California, inhibit VHF downlink.  
 CAL California inhibited.  
 CAPCOM Apollo 8, Houston. Go ahead with backup voice check.  
 CAPCOM Apollo 8, this is Houston. Go ahead with backup voice check, over.  
 CAPCOM Apollo 8, Houston. Go ahead with backup voice check, over.  
 SC Roger, Mike. I gave you a count. I'll give you another one. Standing by.  
 CAPCOM Roger, standing by.  
 SC Roger. This is Apollo 8 through backup voice 1, 2, 3, 4, 5, 5, 4, 3, 2, 1, over.  
 CAPCOM Roger, Bill. Reading you weak but clear. Go ahead with normal S-band voice check.  
 SC Roger.  
 CAPCOM Apollo 8, Houston, over.  
 SC Houston, this is Apollo 8 on normal S-band, 1,2,3,4,5,5,4,3,2,1. How do you read? Over.  
 CAPCOM Apollo 8, Houston. Reading you loud and clear normal S-band. How me?  
 CAPCOM Apollo 8, Houston, reading you loud and clear on normal S-band. How me? Over.

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CAPCOM Apollo 8, Houston, over.  
SC Houston, this is Apollo 8, reading you loud and clear on normal S-band.  
CAPCOM Roger. Reading you loud and clear on normal S-band. How me?  
SC Clear.  
CAPCOM Apollo 8, Houston, over.  
SC Houston, this is Apollo 8. How do you read on VHF? Over.  
CAPCOM Apollo 8, Houston. Reading you loud and clear. We are also reading you loud and clear on S-band normal. How me? Over.  
SC Roger. I'm reading you loud and clear. I'll give you another count on S-band normal. 1,2,3,4,5,5,4,3,2,1. How do you read me?  
CAPCOM Roger. That's loud and clear, Bill. California, would you enable the VHF downlink, please?  
CAL California enabled.  
PAO That is Bill Anders and Mike Collins doing those voice checks.  
CAPCOM Apollo 8, Houston, over.  
SC Go ahead, Houston.  
CAPCOM Roger. We are going to rewind your tape recorder and we have the TLI plus 90 and TLI plus 4-hour fans at your convenience, over.  
SC Roger. Ready to copy.  
CAPCOM Roger. TLI + 90, SPS slash G&N, 63531 - 164 + 129. Are you with me so far, over.  
SC Roger, we're with you.  
CAPCOM Okay. 004174265 - 04402 - 00001 + 48387 178169359, not applicable, + 001854858760348383062027250 -  
PAO The information that Mike Collins is passing to Jim Lovell is procedural numbers and angles should abort become necessary at two discrete periods after the translunar injection burn. Ninety minutes after and then 4 hours after and we should hear quite a few numbers.  
CAPCOM -- + 1123 - 0300012313344940174739, north set stars roll 068, pitch 097, yaw 356, ullage none. Other, high speed procedure not required, over.  
SC Houston, this is Apollo 8. We missed a portion of that maneuver pad. Can you start with HP and go down to northside star, over.  
CAPCOM Roger. I say again, HP + 00185, are you with me?  
SC Roger, we're with you.  
CAPCOM 4858760348383062027 --

END OF TAPE

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CAPCOM 062027250 and the border site star is Earth's center, over.

CAPCOM Apollo 8, Houston, did you copy?

SC Roger, Houston. this is a TLI plus 90 as follows, minus, the weight will be plus 63531 minus 164 plus 129004174265 minus 04402 minus 0001 plus 48387178169359 plus 001854858760348383. We will have to get the sextant information later. 123 minus 030.

CAPCOM Apollo 8, Houston, over.

SC Houston, did you copy.

CAPCOM Apollo 8, Houston, we are picking you up now over Bermuda, I did not copy your readback after Delta V. That was the last point of the (garble).

SC Roger, Houston, could you give us the sextant information again, the sextant star information.

CAPCOM That's affirmative. The sextant star, 06, shaft 2027, trunion 250, over.

SC Roger, starting out with the sextant star, 06 2007 250, earth's center, down 123, right 22 plus 1123 minus 03000 12313 34494 017 47 39, north set, roll 068, pitch 097, yaw 356, no others.

CAPCOM Roger, Jim, on your sextant star, the shaft should be 2027, 2027, over.

SC Roger, copy, 0227.

CAPCOM Apollo 8, Houston, would you go to P00 and accept please, we want to send up the (garble) zero.

SC We are in ACCEPT.

CAPCOM You are in ACCEPT.

SC Roger, go ahead, we are in P00 and ACCEPT.

CAPCOM Thank you. I have your TLI plus 4 hour band, when you are ready to copy and your TLI band also.

SC Roger, ready to copy.

CAPCOM Okay, TLI plus 4 hours, SPS/G and N. The weight is still 63531 as printed, the pitch and yaw minus 164 and plus 12 niner. Are you with me so far?

SC We are with you.

CAPCOM GETI, 00647277 niner minus 015 niner 4 plus 00000 plus 52885178155000, not applicable plus 001 niner 252 niner 0 niner. Are you with me? Apollo 8, Houston, over.

SC This is Apollo 8, You are braking lock on S-band and again, you got cut-off, just at HB.

CAPCOM Okay, HB plus 001 niner 252 niner 0 niner 627526 niner 4, are you with me, over.

SC Yes.

CAPCOM Roger, sextant star, 121037211, earth center, down 063, right 23 plus 1068 minus 1650012505350610264257 north set stars, roll 068, pitch 0 niner 7, yaw 356, ulage none, high speed procedure not required, over.

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SC Roger, Houston, TLI plus 4. Weight remains the same, minus 164 plus 129006472779 minus 01594 plus all ball plus 52885178159000 NA plus 001925290962752694121037211, first thinner, down 063, right 2.3 plus 1068.

PAO And this is Apollo Control Houston here while we are still in communication by the Vanguard, I wanted to pass on to you some real-time telemetry we are getting on a few cabin functions. The cabin pressure has been holding at a rock steady 5.2 pounds per square inch since launch. We've switched now to the bio-med, switched the bio-med harness over to Jim Lovell, on the center couch. His heart has been running around 69 to 70 beats per minute. He's breathing at a steady 25, 20 to 25 respirations per minute. He's been doing alot of talking, alot of writing down there, trying to copy all of those numbers. The cabin temperature is a very comfortable 62 degrees. All of the other sources, the oxygen pressure is still slightly more than 100 percent, we normally launched about 105 to 106 percent, it's showing 104 percent. All other sources in the cabin the bio-med area look quite good. Let's go back now and here even more numbers as we complete this TLI onboard information.

SC Zero niner 1, yaw 001, comments TLI plus -

END OF TAPE

Get 1:25 - 1:50

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CAPCOM Yaw is 001. Comments, TLI plus 10 minutes abort attitude is 199 degrees, and I don't believe you've got time to read that back, we'll see you over Canaries at 1:50 GET. Adios.

PAO You heard Mike Collins, after a conversation that started at 1 hour 25 minutes into the mission, is now 1 hour - nearly 1 hour 50 minutes, to give you some understanding of the extraordinarily long periods that we can hold the spacecraft during these state side passes, and Mike bobbed that conversation off with an "Adios" and said we would pick them up in 1 minute over the Canaries. So essentially we've got, well let's say, on the order of 35 to 40 minutes of continuous communication starting with Guaymus and running through the Canary station. Let's just leave the circuit up. We'll have them back in just a very few seconds.

CAP COM Apollo 8, Houston, over.

SC Roger, Houston, Apollo 8, read you loud and clear. TLI (garbled) 24136 179 005 001 515 105196 35569 357 091 001. TLI plus 10 abort attitude 199 on the pitch.

CAP COM Roger Apollo 8, that is correct. We'd like to double check one number on the TLI plus 90 minutes. When you can dig that out let me know.

SC Roger, go ahead.

CAPCOM Okay, it's the sextant shaft angle should be 2027. Over.

SC Roger. Sextant shaft is 2027.

CAPCOM Thank you, sir.

PAO This is Apollo Control Houston. The flight director has just advised the room that the booster, the S-IVB, all consumable, every bit of data we have looked at and examined indicate we should proceed with the TLI burn. Go back to the crew.

CAPCOM Looking good, both from a guidance and a consumable viewpoint, it all looks GO.

SC Roger.

CAPCOM The DSP is all yours, Bill.

SC Thank you.

CAPCOM Apollo 8 Houston. We will have LOS in 1 minute. We'll pick you up again over Tananarive at 209.

SC Roger, Michael, thank you.

CAPCOM Roger. How does it feel up there?

SC Very good, very good. Everything is going rather well. It looks just about the same way it did three years ago.

CAPCOM Does Bill have time from playing with his tape recorder to look out the window?

SC Roger, we had one little incident here. Jim Lovell inadvertently popped one light, so we've got one full May West over here.

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CAPCOM Roger, I understand.

PAO This is Apollo Control Houston. That will apparently wrap it up via Canary Islands. Tananareve we are due to acquire at 2 hours and 9 minutes into the flight, about 15 minutes from now. You heard on the tag end of that conversation a fairly relaxed Borman commenting that it looked very much like it did three years ago when he and Jim Lovell were flying Gemini 7, and he also reported that inadvertently a May West had been inflated. We're not just sure whose May West it was, but the supposition here is that one tank or one side of the life jacket on the command pilot might have been inadvertently triggered, and we're sure it's causing no difficulty and it will be deflated and stowed at the proper time with the suits. So we will be back at Tananareve at about 10 to 12 minutes. This is Apollo Control, Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/21/68, GET 21500, CST 9:06A 25/1

PAO                    This is Apollo Control Houston, at 2 hours, 15 minutes into the flight. We have had a flight with the crew over Tananarive and among other things, Frank Borman reported that he was Gemini 8, which caused a few smiles. Some wag finally added, "remember you're Gemini 7, not Gemini 8" and here is how the conversation went.

CAPCOM                Apollo 8, Houston through Tananarive, over.

SC                    Apollo 8.

CAPCOM                Roger, Apollo 8, we don't have anything for you, we are just standing by. You're looking real good.

SC                    Thank you.

CAPCOM                Apollo 8, Houston.

SC                    Gemini 8, correction Apollo 8.

CAPCOM                Roger, Gemini 8, Houston, we would like to bring you up to date on the comm situation while we've got some quite time here. We'll be LOS Tananarive in another 2 minutes. We'll be picking you up over Carnarvon at 2 hours, 25 minutes and 22 seconds. LOS Carnarvon will be 23155, then we've got ARIA number 1 coming in about 23730 and after that we will have a hand-off to Mercury to Hawaii to Goldstone, and we should have continuous comm, over.

SC                    Very good, thank you.

CAPCOM                Thought you were Gemini 7, not 8.

PAO                    And that wrapped up the conversation via Tananarive. We'll be back at, standby one here, 2 hours, 25 minutes; 8 minutes from now by Carnarvon.

END OF TAPE



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PAO This is Apollo Control Houston at 2 hours, 26 minutes into the flight. We have just acquired by Carnarvon, and here is how that conversation is going.

CAPCOM Apollo 8, Houston.

SC Go ahead Houston.

CAPCOM Alright, you are GO for TLI, over.

SC Roger, we understand we are GO for TLI.

PAO This is Apollo Control Houston, running through an unusually quiet pass across Carnarvon with very little more than establishing call signs. Our orbital digitals, which we are reading out from Australian sites, show that present velocity is 25 569 feet per second, showing an apogee of 105.5 nautical miles; and our translunar injection burn will have the effect, here's that comm going up, let's catch up with it.

SC The following.

CAPCOM Alright, we will have LOS in about 30 seconds and we will pick you up over ARIA 1 at 237 and 1/2.

SC Roger.

PAO Apollo Control back here. The TLI burn will add 10 500 feet per second, perhaps a foot or more per second; but that is pretty close. Ten thousand, five hundred feet per second to the present 25 570. The duration of the burn will be slightly more than 5 minutes. It will occur 2 hours, and 50 minutes into the flight. Now, a combination of stations will be seeing it. The ship Mercury will see it, parked about a thousand miles south of Hawaii. Hawaii should also see it. In a very few minutes, as the spacecraft starts away from the earth, the big dish in Goldstone, Calif., will acquire. At 2 hours, 33 minutes into the flight, this is Apollo Control Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/21/68, GET 024200, CST 9:33a 27/1

PAO                      This is Apollo Control 2 hours and 42 minutes into the flight. We attempted to establish some conversation through one of our instrumentation aircraft. We heard them, they heard us, but it was just barely. We are now waiting, which we should have in about 2 minutes, through the good ship Mercury. It is entirely appropriate that the ship Mercury should be the relay point for this historic burn which is planned for in about 6 minutes. Flight Director has just advised we should standby to receive Mercury data and that's precisely what we are doing. We will be back to you in about 2 minutes. This is Apollo Control Houston.

END OF TAPE

PAO This is Apollo Control Houston 2 hours 45 minutes into the flight. We are now getting data from the ship Mercury and everything looks good. The booster has advised that the tanks have repressurized properly and here goes the first call up to Apollo 8.

CAPCOM -- through the Mercury and you're looking good down here. Everything looks good.

SC Roger. Understand. Our O2 flow is a little bit higher than I thought, but Bill says that it's just about what he expected.

CAPCOM Roger, understand.

CAPCOM Your O2 flow looks good from down here.

SC Thank you.

PAO Here in the Control Center, two big charts dominate the front of the room, and two of the walls. One of them will present the data as it climbs. It's a plot of velocity versus altitude, so we will be able to track that for you. The other plots show the angle of the burn - is following. Still another shows the ever-so-slight out of plane maneuver. Standby one.

PAO Immediately following the burn, we should get a detailed report on it from Frank Borman. Meanwhile, Bill Anders, during the course of the burn, will operate the onboard flight recorder and on which any various comments from the various crewmembers will be recorded. We will undoubtedly hear some comments from them during the course of the burn. Immediately following the burn, Jim Lovell is to start stowing the many items of camera gear, lenses, mirrors, cables, all that matter of camera equipment, including a spotmeter. The Apollo 8 has been advised once again that they look good for the burn. About every minute, the Flight Director is pulsed, the booster man in this Control Center to get his status.

PAO Thirty seconds to TLI. And Mike Collins gives them the mark 20 seconds to ignition. Now he is counting, 4, 3, 2, we see ignition. Lovell confirms ignition and the thrust is okay, booster says. Flight Dynamics says we look good, Flight - watching the thrust build, trajectory guidance, flight dynamics, everybody in the front, what's called the front trench of this Control Center says they are happy. That includes the booster. Comm says you are looking good. Two hours 51 minutes and 30 seconds, that would put us about 1 minute into the burn. Apogee now 800 miles and climbing.

PAO Hawaii confirmed that they got a very solid lock and Borman almost nonchalantly says Roger, we look good here, at 2 hours 52 minutes.

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PAO Flight Dynamics says we are exactly nominal. Cutoff is now predicted, 2 hours 55 minutes and 58 seconds. The crew has been advised that they look - all values look exactly nominal or just exactly what we hoped they would be. Their present altitude is now about 3000 miles and we are GO and these three crewmembers are traveling faster than man has ever flown before. There is very little conversation with the crew, but let's cut now to the crew and see what we can pick up.

CAPCOM Apollo 8, Houston. You are looking good here. Right down the centerline.

SC Roger. Apollo 8.

PAO Their velocity is now about 32,000 feet per second, 32,000 feet per second. Velocity is now 33,000 feet per second. From Hawaii we are getting a visual report that people in Hawaii are observing the burn from on the ground.

CAPCOM Apollo 8, Houston. You are looking good. Right down the centerline.

SC Roger. Apollo 8.

PAO We are about 40 seconds from cutoff here. The spacecraft is moving at nearly 35,000 feet per second, cutoff is 30 seconds. Present altitude, 35,000 miles.

PAO 60,000 miles we are approaching. We have passed the 60,000 miles and we are very nearly - Borman says we got SECO. Cutoff was right on the second.

END OF TAPE

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PAO At 2 hours and 57 minutes here. All the sources again are being looked at and compared. All are exactly what we had hoped to see and more than once we've heard Chris Kraft, the Director of Flight Operations say, "You're on your way. You're really on your way now." We don't have a exact cutoff figure yet feet per second, but we should be getting it very soon from the flight dynamics officer.

CAPCOM Everything is looking real good down here.

FLIGHT California inhibit VHF down link.

CALIF Inhibited.

CAPCOM Apollo 8 Houston.

SC Go ahead Houston, Apollo 8.

CAPCOM Your cutoff looked very good down here. We have a whole room full of people that say you look good.

SC Roger, thank you. The only situation we have here is the 02 is (garbled) high, 02 is (garbled) high.

CAPCOM Roger, understand 02 flow high.

SC We'll get to first status report here shortly.

CAPCOM Roger.

CAPCOM Apollo 8 Houston. Your booster configured normally, and we're not concerned with the 02 high. We think it's normal.

SC Okay.

SC Houston, Apollo 8.

CAPCOM Go ahead Apollo 8.

SC Roger. The DELTA-TIG looked like it was right on. Burn time appeared to us to be about 2 seconds longer 517 DEX reads 95485 when we got it. The attitude was nominal. DI was reading 35452 at cutoff. H dot 04552 and H 01791 DE -VC on the MS was minus 20.6.

CAPCOM Okay, we copy that, Jim, and I've got some times here for you.

SC Roger, go ahead.

CAPCOM Merger begins maneuver to set attitude at 3 10 55. Takes 5 minutes to arrive at 3 15 55, and set time 3 20 55. Your set attitude the gimbal -

PAO This is Apollo Control. We are getting a post TLI report from the crew. I apologize, I reported some erroneous figures during the course of the burn. Our present altitude is about 240 miles and very shortly we will get a more precise fix on that. I believe in the course of the burn they quoted some features in thousands of miles which should have been in thousands of feet. I apologize. Our new displays are getting a good workout and some of the people reading those new displays are getting a very good

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PAO workout.  
SC Houston, Apollo 8, over.  
CAPCOM Apollo 8, Houston. Go ahead.  
SC Roger. Going to start charging

Interview B.

PAO This is Apollo Control here. We're watching the altitude plot now. Now it's a good solid trace coming to us through Goldstone. We're up to 879 miles. Our present ground elapsed time into the flight is 3 hours 4 minutes. At the same time we are already beginning to see the velocity begin to recede slightly. It's now 2416 feet per second, and we'll continue to see that slight lowering in the velocity reading and a constant reduction of the apogee. Now 934, 961, and every 10 seconds it seems to be adding about 30 to 40 miles. That spacecraft right now, in relation to the earth, is just south of the Goldstone station which has it in solid lock. We are now looking our first midcourse charts, early estimates of what we will be working with, numbers at midcourse, and like so many of our data displays, by the time we get locked up on it with our own eye balls it moves to another channel. At 3 hours and 5 minutes into the flight, this seems to be a convenient stopping point for the action right now. We will be back shortly.

END TAPE

APOLLO 8 MISSION COMMENTARY, 12/21/68, GET 3:08, CST 10:00A 30/1

PAO                      This is Launch Control. And our present planning we are aiming toward the postlaunch press conference at Press Site 39 at about 11:30 am this morning. The participants in this conference will be as follows: Lt. General Samuel C. Phillips, the Apollo Program Director, from NASA Headquarters. Dr. Kurt H. Debus, Director Kennedy Space Center, Dr. Werner von Braun, Director Marshall Space Flight Center, Dr. John Clark, Director of Goddard Space Flight Center, Dr. Robert R. Gilruth is back in Houston. We will see if arrangements can be made to include Dr. Gilruth in on the conference. 11:30 for the postlaunch conference. This is Launch Control.

END OF TAPE

PAO This is Apollo Control Houston, we estimate another 7 or 8 minutes before the spacecraft will separate from the S-IVB. We have not heard from the crew in the last few minutes, they're busy doing post TLI duties and we are looking at data here and everything we see is quite comforting. That is the next major event, separation from the booster. For now, the pool has asked us to replay the communication during translunar injection, which you heard live. Here it is.

CAP COM Apollo 8, Houston. You are looking good.  
SC Roger.  
CAP COM Apollo 8. Coming up on 20 seconds to  
ignition. Mark it, and you are looking very good.  
SC Roger. (Pause) Ignition.  
CAP COM Roger, ignition.  
SC ... we have had TLI ignition.  
Fido, Flight.  
CAP COM Go Flight. Do you look okay?  
We look go. Look good Cap Com.  
Flight booster, all systems go.  
CAP COM Roger.  
Flight Fido, after 800 miles, we are go.  
CAP COM Roger. And climbing.  
What have you got Flight? The antenna?  
Looks good Flight.  
CAP COM The booster?  
Hawaii confirms they have got a very  
solid lock. And Borman almost nonchalantly says Roger.  
CAP COM Apollo 8, Houston, we are predicting cutoff  
2 55 58 and it looks exactly nominal here.  
SC Roger.  
CAP COM Apollo 8, Houston. That predicted cutoff  
2 55 52 - 52 and that is exactly as it should be.  
SC 2 55 52  
PAO This is Apollo Control Houston. 3 hours  
22 minutes into the flight. Exactly 1 minute ago we observed  
separation from the S-IVB. The crew immediately turned around  
and had a look at the S-IVB and we are watching that pitch -  
pitch attitude right now and telemetry coming through over  
the Eastern Test Range. And as the vehicle climbs it will -  
from a flat map projection appear to swing to the south and  
west which, of course is a little unusual for our pass flight -  
the earth orbital tracks which invariably take us to the east.  
But we will observe as swing down starting across the Atlantic  
and back across the upper part of South America. We are now  
trying to establish a call with Apollo 8. Let's - let's see  
what we can get.  
CAP COM Apollo 8. This is Houston. Over.



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SC This is Apollo 8 on VHF and S-band. How  
do you read?

CAP COM Hear loud and clear, Bill. How me?

SC Read you loud and clear. We have sep and  
looking good.

CAP COM Looking good here. (Pause)

PAO This is Apollo Control here. No additional  
communications with crew, but while we have been sitting here  
in the last few minutes, the Mission Control Center has gone  
to what we call the translunar phase map. The new display -  
those of you watching in the News Center will observe that the  
elongated figure 8 map which shows the earth-moon transit and  
it also shows the numbers, the small flashing light now being  
portrayed to us in black and white. And we would estimate  
our distance at something on the order of 3,350 miles from  
earth. It will carry us out in increments of 20,000 miles  
out to - on out to lunar distance. And we will be able to  
observe the declination or the general angle in relation to  
the earth-moon system for the entire flight path of the space-  
craft. Again, we confirmed S-IVB spacecraft separation at  
about 3 hours 21 minutes into the flight. And at this time  
3 hours 27 minutes into the flight, all looks satisfactory.  
This is Apollo Control, Houston.

END OF TAPE

PAO                      This is Apollo Control Houston. The crew seems to be pretty settled down after their translunar injection burn and they are getting some time on the window. We just heard Jim Lovell report he could see Florida perfectly. By the way, they are at about 6500 miles above the earth now. He said he had a beautiful view of Florida and then his gaze roamed a little bit to the other side of the window and he could also see Gibraltar. The crew reminded the Control Center here that Pete Conrad and Dick Gordon would have to step aside. Their altitude record has been exceeded. Let's pick up this conversation now as it unfolds.

SC                      Houston, Apollo 8. How do you read?  
CAPCOM                  Read you loud and clear, Frank. How us?  
SC                      Roger, loud and clear. We are taking pictures of the S-IVB, the postseparation sequence is completed and we seem to have a high gain.

CAPCOM                  Okay, fine.  
CAPCOM                  Apollo 8, Houston.  
SC                      Go ahead, Houston, Apollo 8.  
CAPCOM                  Roger. Is Bill ready for his VHF test?  
We can configure any time he is.

SC                      Okay, stand by.  
CAPCOM                  Apollo 8, Houston.  
SC                      Go ahead, Apollo 8.  
CAPCOM                  Roger. We would like to ask whether you did a VERB 66 enter to transfer the state vector from CSM to LM slot. We didn't copy that down here.

SC                      We did not.  
CAPCOM                  Okay.  
SC                      Do you want us to do that now?  
CAPCOM                  At your convenience.  
SC                      Roger.  
CAPCOM                  (cut off)  
SC                      We see the earth now, almost as a disk.  
CAPCOM                  Good show. Get a picture of it.  
SC                      We are. Tell Conrad he lost his record.  
SC                      We have a beautiful view of Florida now.

We can see the Cape, just the point.  
CAPCOM                  Roger.  
SC                      And at the same time, we can see Africa.  
West Africa is beautiful. I can also see Gibraltar at the same time I'm looking at Florida.

CAPCOM                  Sounds good. Get a picture of it.  
What window are you looking out?  
SC                      The center window.  
CAPCOM                  Roger.

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CAPCOM Are your windows clear so far?  
CAPCOM Apollo 8, Houston.  
SC Go ahead, Houston.  
CAPCOM How about your VHF check? We would like  
to get that done before you get too much further away.  
SC Okay.  
SC Roger, we are listening on VHF now for  
(garble).  
CAPCOM Apollo 8, Houston. Say again.  
SC We are listening on VHF alpha simplex.  
CAPCOM Okay, good, thank you. VHF alpha simplex  
and we will get configured for it and in between times, give  
us a clue as to what it looks like from way up there.  
SC Roger. Well, Mike, I can see the entire  
earth now out of the center window. I can see Florida, Cuba,  
Central America, the whole northern half of Central America,  
in fact all the way down through Argentina and down through  
Chile.  
CAPCOM They picked a good day for it.  
SC Stand by. We are going through the separ-  
ation maneuver checklist here.  
CAPCOM Roger, standing by.  
SC Houston, this is Apollo 8. We've lost  
sight of the S-IVB here. The separation maneuver may be de-  
layed slightly or else we will go ahead and make it without  
having her in sight.  
CAPCOM Roger, understand, Frank.  
SC Houston, Apollo 8.  
CAPCOM Apollo 8, Houston. Go ahead.  
SC When does the S-IVB do their blowdown  
maneuver?  
CAPCOM Stand by one.  
CAPCOM Apollo 8, Houston.  
SC Go on.  
CAPCOM Your blowdown will be 1 hour from now, a  
little more than 1 hour from now.  
SC Roger. We have the S-IVB in sight again  
now. We have done the separation maneuver.  
CAPCOM Good show. Thank you.  
CAPCOM Apollo 8, Houston.  
SC Go ahead, Houston.  
CAPCOM We would like to take control of the DSE  
for a while, Bill.  
SC Go ahead.  
CAPCOM Thank you.  
CAPCOM Apollo 8, Houston. We would like to get  
an approximate GET of your sep maneuver to use for our ephemeris

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CAP COM tracking data.  
SC Roger. Was 3 hours 40 minutes zero seconds.  
CAP COM 3 40 and a foot and a half - feet per  
second. Right?  
SC Roger. About that.  
CAP COM Okay --  
SC --We have the - Mike, we have the exact  
callout here for you and a burn status report.  
CAP COM All right.  
SC All right, delta VX minus 0011, delta VY  
plus 0002, delta VZ minus 0002, roll 0, pitch 180, yaw 0.  
Over.  
CAP COM Yes, Roger.  
CAP COM Apollo 8. Houston.  
SC Go ahead Houston. Apollo 8.  
CAP COM Roger. At your convenience, would you  
please go PU and accept with an update to your W matrix?  
And also when you get a chance we would like to know about  
the SLA panels. Did they all depart? And do you have any  
comments about the SLA?  
SC They all departed and they worked fine.  
CAP COM Okay, thank you.  
SC We are in PU and accept.  
CAP COM Thank you.  
SC Houston. Apollo 8. Will you give us  
the information when you want us to stop the venting and so  
on.  
CAP COM Apollo 8. Houston. Roger.  
CAP COM Apollo 8. Houston.  
SC Go ahead, Houston.  
CAP COM Roger. What is the venting information  
are your inquiring about, the O2 flow high out through the  
waste tank or waste compartment or you talking about your  
evaporator?  
SC Evaporator. We are configuring.  
CAP COM Okay.  
CAP COM ... concur in that.  
CAP COM Apollo 8. Houston. You can go back to  
the block. We have gotten in the load to the W matrix update.  
SC Roger.  
SC Houston. Apollo 8. The backpressure  
valve is closed and the water flow is off.  
CAP COM Backpressure valve closed and water  
flow off. Thank you.  
SC Houston. Apollo 8 here.

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CAPCOM Apollo 8, Houston. Go ahead.

SC Roger. It looks like I might have to do a couple more small maneuvers to stay away from the front of this S-IVB the way we are ending up now. Do you want me to do these with our P-47 if we have to do them?

PAO This is Apollo Control Houston 3 hours 55 minutes into the flight. We have additional comm here, but at this point, we are going to join a postlaunch press conference at the Cape. Let's switch to the Cape.

END OF TAPE

PAO                      This is Apollo Control Houston at 4 hours, 21 minutes into the flight. In the last half-hour, we've had a very interesting interchange with the crew. They've given us a good discription of what has been going on; but more than that, we've been occupied with trying to understand what the proper maneuver would be to give us added separation from the S-IVB. Borman reported some 15 to 20 minutes ago, that he thought the S-IVB was staying a little bit to close for comfort. He estimated that its distance from the spacecraft 500 to 1000 feet and he said he was viewing quite alot of venting, not propulsive venting, but just great clouds of venting coming from the S-IVB. He later reported that it had stopped. In the course of the last 20 to 25 minutes, we have been playing music on the VHF by VHF out of California, and the crew reports Herb Alfred sounds great. It's being beamed to him just a little bit north of his native Tituana. So that system, we are trying to find out just how far out in space the VHF will carry. Certainly the quote that stopped us all, more so than anything else came from Borman. I'm sure it was by accident, but at one point he, in trying to configure for a slight burn to give him added seperation from the S-IVB, Borman says "as soon as we find the earth, we'll do it", and that brought a loud clap of laughter here. Here is quite alot of tape going back over the last 17 or 18 minutes.

CAPCOM                      Standby. That's affirmative Frank on this P47.

SC                          Okay, and give me the time again when it starts to damp please.

CAPCOM                      Roger. We're working on an exact GET of that Frank.

SC                          Right.

CAPCOM                      Apollo 8, Houston.

SC                          Go ahead.

CAPCOM                      I'd like to give you some idea of your trajectory. It looks like a mid-course direction number 1, trajected out to TLI plus 6 hours, would be only 7 feet per second. So any further maneuvers you do would add to that which is probably good.

SC                          I just want to stay from away from in front of this thing.

CAPCOM                      Roger. we concurr. Looks like it is safe now.

SC                          Yes. OMNI B. Starting to vent now, slowing down.

CAPCOM                      Apollo 8, Houston, say again.

SC                          The S-IVB is really venting.

CAPCOM                      Roger, understand that is a (garble) nonpropulsive vent. The big blow-down maneuver, its starts

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CAPCOM maneuvering to blow-down attitude at 44455 and the vent occurs at 50755.

SC 50755.

CAPCOM Roger.

SC That is the nonpropulsive vent, but it's pretty spectacular. It's spewing out from all sides like a huge water sprinkler.

CAPCOM Roger, get some pictures of it.

SC Say again that big vent time, so I can write it down Houston.

CAPCOM Big vent time, 50755 and it will be maneuvering to vent attitude beginning at 44455. Bill has got the tape recorder back.

SC Roger. We're receiving VHF music now, Houston, thank you.

CAPCOM Yes, you took the words right out of my mouth Frank, and we would like to know also how far you are away from the S-IVB you are now.

SC I guess we are between 500 to 1000 feet.

CAPCOM Roger.

SC Herb Alpert seems pretty good.

CAPCOM Roger.

SC Houston, Apollo 8.

CAPCOM Apollo 8, Houston.

SC Roger, I believe we are going to have to vent or thrust away from this thing, we seem to be getting closer.

CAPCOM Roger, understand Frank, go ahead whenever, just give us some idea of when you did it and how much.

SC Roger.

CAPCOM Apollo 8, Houston. Did you, standby 1, we are working on something here.

SC Okay.

CAPCOM Apollo 8, Houston. Apollo 8, this is Houston, over. Apollo 8, this is Houston, over.

SC You are loud and clear Mike, go ahead.

CAPCOM Okay Frank, on your additional separation maneuver, we recommend that you make a radio burn, point your X-axis toward the earth and thrust minus X for three feet per second, over.

SC I don't want to do that.

CAPCOM The reason we want a radio burn is to increase your mid-course direction, so we can use the SPS. Standby on it.

CAPCOM Apollo 8, Houston.

SC Go ahead.

CAPCOM How close to a radio burn can you get, without losing site of the S-IVB burn.

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SC Well, I don't know because I can't -  
CAPCOM Okay.  
SC We can pitch down some, Jim has the Earth  
and the optics, so we could pitch some and get pretty close  
to one, I guess.  
CAPCOM Apollo 8, Houston.  
SC Go ahead, Houston, Apollo 8.  
CAPCOM We can give you a pitch gimbal angle  
on the radio direction if -

END OF TAPE



CAP COM Apollo 8. Houston.  
SC Go ahead, Houston. Apollo 8.  
CAP COM We can give you a pitch gimbal angle on radio direction, if that would be a help. It's 181 pitch gimbal angle would be exactly radial at 4 hours and 10 minutes. I don't know whether that solves your visibility problem or not.  
SC 181?  
CAP COM That's affirmative. S-band.  
SC Zero would be just as good, wouldn't it?  
CAP COM Frank, if you used zero, then make the sep if possible in the +X thrusters. That's the direction of the burn we are going.  
SC Well, can't do that. I'll thrust right square into that S-IVB.  
CAP COM Yeah, okay, understand.  
SC What would you maneuver to as far as the gimbal angle for his blowdown?  
CAP COM Apollo 8. Houston. That blowdown, that S-IVB should be oriented to perform a retrograde blowdown. Along the local horizontal. Is it still chasing. Does it look like it is closing or anything?  
SC It is about the same. The trouble is it is pointed at us pretty well.  
CAP COM Roger. Understand.  
CAP COM Frank, what we want to do is get a radial upward burn and as long as you can through the optics or some other means out the window, figure out where the earth is, then use the appropriate thrusters, to thrust upward, radial upward for 3 feet per second, that is what we are looking for for trajectory.  
SC Okay, understand. I just - as I say, I just can't very well do that now. I don't want to lose sight of this S-IVB.  
CAP COM Roger. We concur with that. I just thought perhaps Jim, through his optics or you could get some feel for where the earth is. That's what we want to do is radial upward.  
SC Okay, as soon as we find the earth we will do it.  
CAP COM Thank you.  
SC Houston. The venting on the S-IVB is terminated.  
CAP COM Roger. Thank you.  
CAP COM Apollo 8. Houston.  
SC Go ahead Houston. Apollo 8.